

## ABSTRACT

An optical fiber and an optical transmission system are provided which enable a large-volume and long-haul transmission, using light signals having a plurality of wavelengths in a wide range of wavelength bands including 1.31  $\mu$  m band, 1.45  $\mu$  m band, 1.55  $\mu$  m band and 1.58  $\mu$  m band, and restraining the waveform degradation of the light signals due to nonlinear optical phenomena as well as the waveform degradation of light signals due to the accumulation of chromatic dispersions. The chromatic dispersion of the optical fiber according to the present invention is  $-20 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or more but  $-3 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or less in the whole wavelength range of 1300 nm to 1600 nm. The optical transmission system according to the present invention is also equipped with (1) a plurality of transmitters to transmit light signals having wavelengths in the range of 1300 nm to 1600 nm, (2) an optical fiber whose chromatic dispersion is  $-20 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or more but  $-3 \text{ ps} \cdot \text{nm}^{-1} \cdot \text{km}^{-1}$  or less in the wavelength range of 1300 nm to 1600 nm, and (3) receivers which receive the light signals.